

A Review of the Genus *Nesostethus* Kirkaldy (Hemiptera: Lygaeidae: Lygaeinae)

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Abstract.—The genus *Nesostethus* Kirkaldy is reviewed, and the known species, *N. niger* China and *N. ornatus* Kirkaldy, are redescribed. Four new species are described: *N. bipartitus* and *N. variegatus* from Fiji, *N. fuscus* from the New Hebrides, and *N. lunatus* from Tonga.

Kirkaldy (1908) described *Stalagmostethus ornatus* as a new species from Fiji (Rewa) and placed it in a new subgenus that he named *Nesostethus*. He characterized this by color and by the following structural features: fourth labial segment longer than third; scutellum with T-shaped carina; hemelytra with strong veins; pronotum with keel, but this obsolete anteriorly.

China (1930) elevated *Nesostethus* to generic rank and described a new species *N. niger* from Samoa. However, he was unsure of the generic placement, stating "the present Samoan species has been referred to it, in spite of the fact that there are certain differences which Stål and Kirkaldy have regarded as of subgeneric importance. This course seems to be preferable (for the time being at any rate) to that of creating still another genus." Since this time, there has been no reference to the genus, except for the citation in Slater (1964).

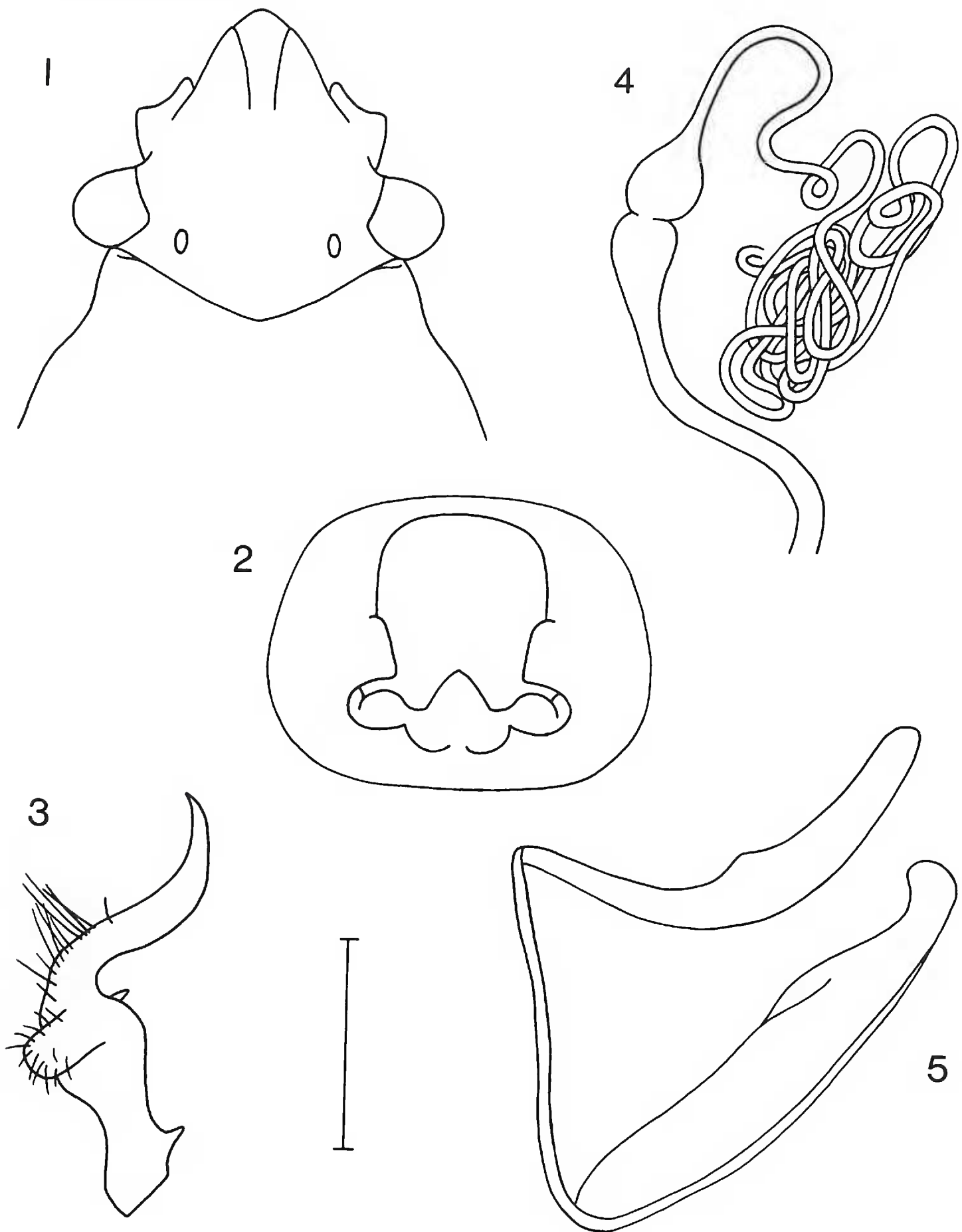
In my ongoing study of the Pacific Lygaeinae, I have needed to clarify the identity of the genus. In the study of available material, I have found four new species. I herein redescribe the genus, the known species and the new taxa.

Nesostethus Kirkaldy

Stalagmostethus sg. *Nesostethus* Kirkaldy 1908, Proc. Linn. Soc. N.S.W. 33:355.
Nesostethus; China 1930, Ins. Samoa, Pt. 2, Hemipt. 3:115.

Moderate to large (7.7–11.1 mm), variously colored orange, red and black insects; macropterous, body matt with head, lateral margins of pronotum, costal margin of corium, legs and abdomen shiny. Dorsum at most with short, curved, decumbent pubescence.

Head (Fig. 1) moderately declined, and in line with pronotum; wider than long; eyes not stylate; eyes close to anterior margin of pronotum; vertex gently convex and smooth; ocelli closer to eyes than to each other; antennal tubercles visible from above; bucculae prominent anteriorly, tapering posteriorly, and extending to level of middle of eye. First antennal segment surpassing apex of head by about half of length; third segment gradually thickening apically; fourth antennal segment usually slightly longer than second. Rostum reaching to or just beyond hind coxae; first segment slightly thicker than second and just surpassing anterior margin of prosternum; fourth segment longer than third.



Figures 1–5. *Nesostethus ornatus*. 1. Head and anterior part of pronotum. 2. Caudal view of male genital capsule. 3. Right clasper. 4. Spermatheca. 5. Second gonocoxa and gonopophysis. Scale line = 0.50 mm for Fig. 1, 0.33 mm for Fig. 2 and 0.165 for Figs. 3, 4 and 5.

Pronotum at most weakly punctate anteriorly; anterior margin without collar, concave in centre and appearing rather sinuate; posterior margin straight or slightly concave, with shallow impression on either side of scutellum; lateral margins rounded, straight and somewhat convergent anteriorly; disc gently convex, with median longitudinal carina behind callal area, and slight transverse impression

one-third way from anterior; callal area flat or gently convex, the calli sinuate and slightly oblique.

Scutellum flat with tumid T-shaped carina; laterally impunctate and fovea not distinct; apex roundly pointed. Ostiolar peritreme auriculate.

Hemelytra reaching just beyond end of abdomen; costal margin straight or gently sinuate; clavus and corium with veins strongly raised; basal third of costal margin and claval commissure hirsute.

Legs unarmed; coxae hirsute. Abdomen without laterotergites, but with sternum II exposed; sterna III-VI with anterior dorso-lateral "apertures." Male genital capsule and parameres as in Figs. 2-3; spermatheca as in Fig. 4; second gonapophysis with upturned tip (Fig. 5).

Type species: *Stalagmostethus (Nesostethus) ornatus* Kirkaldy 1908 (Monobasic).

Structurally the head and pronotum are similar to *Melanerythrus* Stål, but *Nesostethus* differs by having less elevated bucculae, strongly raised venation on the corium and clavus, the fourth rostral segment longer than the third, and the scutellum with a T-shaped tumid elevation rather than a longitudinal central carina.

Although nothing is known about the biology, specimens of *N. ornatus* have been found to contain cardenolides in very high concentrations (Scudder and Duffey 1972). The genus may thus be associated with Asclepiadaceae and the abdomen appears structurally capable of releasing cardenolides as in *Oncopeltus fasciatus* (Scudder and Meredith 1982).

Nesostethus bipartitus NEW SPECIES

Male.—Head, dorsally and ventrally, red with apex of clypeus black; antennae black; rostrum black with first segment and base of second, orange-red. Pronotum orange-red with humeral angles and median longitudinal streak on hind margin, black. Scutellum orange-red. Clavus black; corium black with costal half of apical two-thirds red; membrane black with apical margin narrowly white. Prosternum, thoracic pleura and ostiolar peritreme, orange-red. Coxae orange-red; rest of legs black. Abdomen red. Head width 1.60 mm; antennal measurements 0.77: 2.13: 1.67: ? mm; rostrum reaching to posterior margin of hind coxae. Pronotal width 2.47 mm, pronotal length 1.58 mm. Anterior half of pronotum punctate. Corium with very sparse, short decumbent pubescence; costal margin of corium sinuate. Thoracic pleura with scattered, short, semi-erect hairs. Total length 8.8 mm.

Holotype.—♂, FIJI, Matuku I., 5.vii.24 (E. H. Bryan, Jr.) (Bishop Museum).

Similar to the species herein described as *N. variegatus*, but differing in the color pattern of the corium and membrane.

Nesostethus fuscus NEW SPECIES

Female.—Insects completely black, except for ostiolar peritreme and abdomen which are yellow; anterior dorso-lateral corners of sterna III-VI with small fuscous spots. Head width 1.70 mm; antennal measurements 0.83: 2.17: 1.60: 2.23 mm; rostrum attaining hind coxae. Pronotal width 3.07 (2.95-3.07) mm; pronotal length 2.00 (1.90-2.00) mm. Pronotum anteriorly vaguely punctate; corium with scattered, short, decumbent pubescence; costal margin of corium sinuate. Thoracic pleura with distinct decumbent, sericeous pubescence. Total length 10.5 (9.8-10.5) mm.

Male.—Color and structure as in female. Head width 1.60 (1.53-1.70) mm;

antennal measurements 0.74 (0.67–0.83): 2.05 (1.93–2.20): 1.53 (1.50–1.60): 2.18 (2.10–2.74) mm. Pronotal width 2.58 (2.37–2.80) mm; pronotal length 1.71 (1.57–1.90) mm. Total length 8.5 (8.3–9.3) mm.

Holotype.—♀, NEW HEBRIDES, Maewo I. Sounwari, 15° 23' S 168° 07' E, 0–400 m, 4–5.ix.79 (W. C. Gagne) (Bishop Museum).

Paratypes.—2♂ 1♀, NEW HEBRIDES (but labelled Solomon Is.), Epi (H. W. Simmonds); 1M, NEW HEBRIDES, Malekula, Ounua, ii.29 (L. E. Cheesman); 1M, NEW HEBRIDES, Espirito Santo, 12.iii.43; 1♀, NEW HEBRIDES, Epi I., Valmali, 80–150 m, 11–18.viii.67 (J. & M. Sedlacek); (Bishop Museum; British Museum [Nat. Hist.]; Scudder Coll.).

This species can be separated from *N. niger* by the moderately dense, decumbent pubescence to the corium and thoracic pleura, the sinuate costal margin, and the yellowish ostiolar peritreme and abdomen.

Nesostethus lunatus NEW SPECIES

Male.—Head, dorsally and ventrally orange-red, with apex of clypeus and v-shaped mark between ocelli, black; antennae black; rostrum fuscous with most of first segment orange-red. Pronotum and scutellum orange-red. Corium and clavus completely black; membrane black with apical margin narrowly white, and basal angle with white area. Prosternum, thoracic pleura and ostiolar peritreme, orange-red. Legs black with coxae orange-yellow. Abdomen orange-yellow.

Head width 1.50 mm; antennal measurements 0.67: 1.90: 1.53: 2.03 mm; rostrum reaching to middle of hind coxae. Pronotal width 2.23 mm, pronotal length 1.42 mm. Pronotum vaguely punctate. Corium with sparse, short, decumbent pubescence; costal margin of corium almost straight. Thoracic pleura with scattered, short, semi-erect hairs. Total length 7.7 mm.

Holotype.—♂, TONGA IS., Vavua I., Neiafu, ii.56 (N. Krauss) (Bishop Museum).

Similar to *N. ornatus*, but differing in the coloration of the membrane.

Nesostethus niger China

Nesostethus niger China 1930, Ins. Samoa, Pt. 2, Hemipt. 3:113.

Female.—Insects completely black, except for posterior and dorsal areas of metapleuron and ostiolar peritreme, which are dusky orange, and abdomen, which is orange-red.

Head width ♀ 1.75 mm; antennal measurements ♀ 0.34: 2.50: 1.80: 2.30 mm; rostrum reaching to hind coxae. Pronotal width ♀ 2.65 mm, pronotal length ♀ 2.00 mm. Pronotum anteriorly vaguely punctate. Corium almost glabrous, with at most scattered, short, decumbent pubescence, the costal margin straight. Thoracic pleura virtually glabrous. Total length ♀ 9.3 mm.

Material examined: 1♀ (type) SAMOA, iii–viii.21 (F. W. O'Connor) (British Museum [Nat. Hist.]).

N. niger can be recognized by the predominantly black color and orange-red abdomen, with the corium rather glabrous and the costal margin straight. The species herein described as *N. fuscus* differs in having the costal margin of the hemelytra sinuate and surface of corium and thoracic pleura with a moderately dense, short, decumbent pubescence.

Nesostethus ornatus Kirkaldy

Stalagmostethus (Nesostethus) ornatus Kirkaldy 1908, Proc. Linn. Soc. N.S.W. 33:355.

Nesostethus ornatus; China 1930, Ins. Samoa, Pt. 2, Hemipt. 3:115.

Head, dorsally and ventrally orange-red, with apex of clypeus and v-shaped area between ocelli, black; antennae black; rostrum black with basal half of first segment orange-red. Pronotum and scutellum orange-red, the humeral angles of pronotum sometimes slightly dusky. Hemelytra, including membrane, completely black. Prosternum, thoracic pleura and ostiolar peritreme, orange-red. Legs black, with coxae orange-yellow. Abdomen pale greenish.

Head width ♂ 1.65 (1.60–1.70) mm, ♀ 1.79 (1.70–1.85) mm; antennal measurements ♂ 0.73 (0.70–0.75): 2.08 (2.00–2.15): 1.60 (1.55–1.70): 2.33 (2.20–2.45) mm, ♀ 0.78 (0.75–0.80): 2.32 (2.25–2.35): 1.73 (1.70–1.75): 2.15 mm; rostrum reaching to middle of hind coxae. Pronotal width ♂ 2.50 (2.30–2.65) mm, ♀ 3.06 (2.80–3.30) mm; pronotal length ♂ 1.65 (1.55–1.70) mm, ♀ 2.01 (1.85–2.15) mm. Pronotum anterior vaguely punctate; corium almost glabrous; costal margin of corium sinuate. Thoracic pleura with scattered, short, semi-erect hairs. Total length ♂ 8.4 (8.2–8.5) mm, ♀ 10.8 (10.5–11.1) mm.

Material examined.—1♀, FIJI, Cuvu, 1.i.17 (R. Veitch) (BM); 1♂, FIJI IS., Levuka, v.21 (H. W. Simmonds) (British Museum); 1♂ 1♀, FIJI, Ovalau, v.22 (H. W. Simmonds) (BM); 1♂, FIJI IS., Viti Levu, Colo-i-Suva, 28.vi.24 (E. H. Bryan, Jr.) (Bishop Mus.); 1♀, FIJI, Colo. Emb., 10.iii.42 (R. A. Lever) (British Museum); 1♀, Ins. Viti (Stockholm).

Similar to the species herein described as *N. lunatus*, but with a completely black membrane.

Nesostethus variegatus NEW SPECIES

Male.—Head, dorsally and ventrally, orange-red with apex of clypeus black; antennae black; rostrum black, the first segment orange-red with extreme apex black. Pronotum and scutellum orange-red. Clavus black; corium with basal half black and apical half red; membrane black with apical third fading through ochraceous to pale apical margin, the basal angle with a pale white triangular mark. Prosternum, thoracic sterna and ostiolar peritreme orange. Coxae orange; trochanters dusky orange; rest of legs black. Abdomen red.

Head width 1.53 mm; antennal measurements 0.67: 1.87: ?: ? mm; rostrum reaching to sternum II. Pronotal width 2.00 mm, pronotal length 1.33 mm. Pronotum anteriorly vaguely punctate; thoracic pleura with scattered, short, semi-erect hairs; corium with scattered, short, decumbent pubescence; costal margin of corium sinuate. Total length 7.3 mm.

Holotype.—♂, FIJI, Lau, Fulanga, 5.viii.24 (E. H. Bryan, Jr.) (Bishop Museum).
Museum).

Similar to the species herein described as *N. bipartitus*, but differing in color pattern of the corium and membrane.

Key to Species of *Nesostethus*

1. Head, pronotum, scutellum, thoracic pleura and coxae, black 2
- Head, pronotum, scutellum, thoracic pleura and coxae, orange-red 3

2. Dorsum more or less glabrous; costal margin of corium straight; abdomen red *niger* China
 — Dorsum with distinct, decumbent, sericeous pubescence; costal margin of corium sinuate; abdomen pale yellow *fuscus* Scudder
3. Corium completely black 4
 — Corium not completely black 5
4. Membrane completely black *ornatus* Kirkaldy
 — Membrane black with margin narrowly pale, and with white triangular area at basal angle *lunatus* Scudder
5. Corium with basal half black, apical half red *variegatus* Scudder
 — Corium black with costal half of apical two-thirds red . . . *bipartitus* Scudder

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